



## SOARS Facilitates Data Collection at Remote Sites

Systems Operation and Analysis at Remote Sites (SOARS) was established in 2006 to improve data collection at LM sites. Many LM sites are in remote locations and collecting data by regular field visits can be costly. This project established the feasibility of collecting data remotely and transmitting to LM servers daily. Well pumps are also controlled remotely through SOARS. This remote data collection improves safety by reducing the number of miles that LM employees and contractors need to drive. Another advantage is that data are available immediately, improving the ability to diagnose problems, make timely repairs, and expedite corrective actions. All data collection and graphing are done automatically using a powerful post-processing program to plot data and make calculations, producing real-time graphs available to all project scientists and managers across the LM network.

SOARS systems have been installed at 16 LM sites in 9 states. SOARS is powered using 62 solar panels and 26 connections to power lines. Data are collected on 90 field dataloggers. Field site communication is accomplished using 82 radios. Approximately 460 instruments are used to measure flow rate, water level, in-line pressure, pH, oxidation-reduction potential, conductivity, turbidity, unsaturated-zone moisture, wind speed and direction, relative humidity, solar radiation, rainfall, and water infiltration rate. About 150,000 data values are transmitted daily through 13 cell modems and 6 land lines and stored on a secure LM server.